In the Claims

1. (Currently amended) Process for producing a compound of the formula $LiMPO_4$, ~~in which M represents at least one metal from the first transition series,~~ comprising: ~~the following steps:~~

a. ~~production of~~producing a precursor mixture~~,~~ containing at least one Li^+ source, at least one M^{2+} source and at least one PO_4^{3-} source, wherein M comprises at least one metal from the first transition series,; in order to form a precipitate and thereby to produce a precursor suspension;

b. dispersing or milling ~~treatment of~~ the precursor mixture or suspension ~~and/or the precursor suspension~~ until the D90 value of ~~the~~ particles in a precipitate of the precursor mixture or suspension ~~is~~are less than 50 µm; and

c. ~~the~~ obtaining ~~of~~ $LiMPO_4$ from the precursor mixture or suspension ~~obtained in accordance with b), preferably~~ by reaction under hydrothermal conditions.

2. (Currently amended) Process according to Claim 1, characterized in that the D90 value of the particles ~~in the suspension~~ is at most 25 µm.~~, in particular at most 20 µm, particularly preferably at most 15 µm.~~

3. (Currently amended) Process according to Claim 1~~ or 2~~,

characterized in that M ~~at least~~ comprises Fe ~~or represents Fe~~.

4. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 1, characterized in that M ~~comprises~~ is selected from Fe, Mn, Co and~~/or~~ Ni and mixtures thereof.

5. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 1, characterized in that the $LiMPO_4$ is ~~obtained~~ in pure-phase form.

6. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 1, characterized in that the dispersing or milling begins ~~treatment is used~~ before or during ~~the~~ precipitation of the particles in the precursor mixture or suspension and is continued until the precipitation has concluded.

7. (Cancelled)

8. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 1, characterized in that ~~no~~ evaporation does not ~~occurs~~ occur prior to the reaction of the precursor mixture or suspension under hydrothermal conditions.

9. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that ~~no~~ sintering ~~takes~~ does not take place prior to the reaction of the precursor mixture or suspension under hydrothermal conditions.

10. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the $LiMPO_4$ is dried following the reaction under hydrothermal conditions.

11. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the production of the precursor mixture or suspension or the ~~conversion~~reaction under hydrothermal conditions takes place in the presence of at least one further component~~, in particular~~ selected from a carbon-containing ~~or~~ substance, an electron-conducting substance, ~~or~~ the precursor of ~~an~~the electron-conducting substance, and mixtures thereof.

12. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 11, characterized in that the electron-conducting substance is ~~carbon, in particular~~ selected from conductive carbon, ~~or~~ carbon fibers and mixtures thereof.

13. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 11, characterized in that the precursor of ~~an~~the electron-conducting substance ~~is a carbon-containing substance,~~comprises ~~in particular~~ a sugar compound.

14. (Currently amended) Process according to ~~one of the preceding claims,~~Claim 1, characterized in that the ~~lithium~~ Li^+ source is selected from ~~used is~~ $LiOH$, ~~or~~ Li_2CO_3 and

mixtures thereof.

15. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the Fe^{2+} source ~~used~~ is ~~a Fe^{2+} salt, in particular~~ selected from $FeSO_4$, $FeCl_2$, $FeNO_3$, $Fe_3(PO_4)_2$, ~~or~~ an organyl salt of iron and mixtures thereof.

16. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the PO_4^{3-} source ~~used~~ is selected from phosphoric acid, a metal phosphate, hydrogen phosphate, ~~or~~ dihydrogen phosphate and mixtures thereof.

17. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that water is ~~used as~~ a solvent ~~in~~for the precursor mixture or suspension.

18. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the Li^+ source~~,~~ and the M^{2+} source are ~~used~~ in the form of aqueous solutions, and the PO_4^{3-} source is ~~used~~ in the form of a liquid or an aqueous solution.

19. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the precipitate formed ~~in the precursor suspension~~ comprises at least one precursor of $LiMPO_4$~~, in particular vivianite, and the reaction to form $LiMPO_4$ then preferably takes place under hydrothermal conditions~~.

20. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the hydrothermal conditions comprise a temperatures ~~of~~ between 100 and 250°C, ~~in particular from 100 to 180°C,~~ and a pressure ~~of~~ from 1 bar to 40 bar~~, in particular from 1 bar to 10 bar steam pressure, are used under the hydrothermal conditions~~.

21. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the components of the precursor mixture or suspension are present in ~~the following~~ a stoichiometric ratio selected from:

a. 1 mole Fe^{2+} : 1 mole PO_4^{3-} : 1 mole Li* ~~(1:1:1),~~

b. 1 mole Fe^{2+} : 1 mole PO_4^{3-} : 3 mole Li* ~~(1:1:3),~~ and

c. any mixing ratio between a. and b.

22. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the ~~combining or~~ reaction ~~of the precursor mixture or suspension~~ under hydrothermal conditions takes place under an inert gas atmosphere ~~preferably in the same vessel~~.

23. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that ~~first of all, in an aqueous solvent,~~ the M^{2+} source and the PO_4^{3-} source are first mixed ~~, in particular~~ in an aqueous solvent under an inert gas atmosphere, ~~then preferably once again under a protective gas or inert atmosphere,~~ followed by the addition

of the Li^+ source under a protective gas or inert atmosphere, ~~is added,~~ and then the reaction under hydrothermal conditions is carried out.

24. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that the dispersing or milling ~~treatment is~~comprises a treatment with a dispersing means ~~(with or without pump rotor),~~ selected from Ultraturrax stirrers, mills, such as colloid mills or Manton-Gaulin mills, intensive mixers, centrifugal pumps, in-line mixtures, mixing nozzles, such as injector nozzles, ~~or~~ ultrasound appliances and combinations thereof.

25. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 1, characterized in that a stirring mechanism ~~or the like, in particular an Ultraturrax stirrer,~~ is used for the ~~high shearing treatment in accordance with Claim 1b,~~dispersing or milling conducted along with the introduction of power, calculated according to the formula $P = 2 \pi n M$, where M represents the torque and n represents the rotational speed, being at least 5 kW/m^3~~, in particular at least 7 kW/m^3~~.

26. (Currently amended) Process according to ~~one of the preceding claims,~~ Claim 11, characterized in that the ~~additional~~further component ~~in accordance with Claim 11 or 12~~ is used as a crystallization nucleus in the ~~precipitation or reaction of the~~ precursor mixture or solution.

27. (Cancelled)

28. (Currently amended) The process of Claim 1, wherein the $LiMPO_4$~~, in particular according to Claim 27, characterized in that the~~ has a mean particle size~~, (~~D50 value~~) is~~ of less than 0.8 µm~~, preferably less than 0.7 µm, in particular less than 0.6 µm, particularly preferably less than 0.5 µm~~.

29. (Currently amended) ~~$LiMPO_4$, according to Claim 27 or 28, characterized in that~~ The process of Claim 1, wherein the D10 value of the particles is less than 0.4 µm~~, preferably less than 0.35 µm,~~ and ~~also preferably~~ the D90 value is less than 3.0 µm~~, in particular less than 2.5 µm, most preferably less than 2.0 µm~~.

30. (Currently amended) ~~$LiMPO_4$, according to one of Claims 27 to 29, characterized in that~~ The process of Claim 29, wherein the difference between the D90 value and the D10 value of the particles is no more than 2 µm~~, preferably no more than 1.5 µm, in particular no more than 1 µm, particularly preferably no more than 0.5 µm~~.

31. (Currently amended) ~~$LiMPO_4$, according to one of Claims 27 to 30, characterized in that~~ The process of Claim 1, wherein the BET surface area of the particles is more than 3.5 m^2/g~~, in particular more than 4 m^2/g, particularly preferably more than 5 m^2/g, further preferably more than 10 m^2/g, most preferably more than 15 m^2/g~~.

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Currently amended) Process according to ~~one of Claims 1 to 26,~~ Claim 1, characterized in that the $LiMPO_4$, after the hydrothermal treatment~~,~~ is separated off~~, in particular~~ by filtration ~~and/~~or centrifuging, ~~if appropriate~~is dried and ~~if appropriate~~ deagglomerated.

37. (Currently amended) Process according to ~~one of Claims 1 to 26,~~ Claim 1, characterized in that the $LiMPO_4$, obtained from the hydrothermal treatment ~~in a pyrolysis process, in which~~is mixed with at least one carbon precursor material, ~~preferably a carbohydrate,~~ such as sugar or cellulose, ~~and particularly preferably lactose, is mixed with the $LiMPO_4$, e.g.~~ by kneading~~, it being possible to add water as an auxiliary~~.

38. (Currently amended) Process according to Claim 37, characterized in that the ~~carbon precursor material is added to the moist $LiMPO_4$ filter cake obtained by separation after the hydrothermal synthesis, the mixture of $LiMPO_4$ and carbon precursor material~~ mixed material produced is dried and heated to a temperature between 500°C and 1000°C, ~~preferably between 700°C and 800°C,~~ during which operation the carbon precursor material is pyrolyzed to form carbon.

39. (Currently amended) Process according to Claim 38,

characterized in that the pyrolysis process is followed by a milling or deagglomeration treatment.

40. (Currently amended) Process according to Claim 38 ~~or 39~~, characterized in that the drying is ~~preferably~~ carried out under a protective gas, in air or in vacuo at temperatures of ~~preferably~~ from 50°C to 200°C, and the pyrolysis is carried out under a protective gas.

41. (New) $LiMPO_4$ particles produced by the process of Claim 1, wherein said particles have a particle size distribution such that the D90 value for said particle aggregates is less than 3.0 µm.

42. (New) The $LiMPO_4$ particles of Claim 41, wherein the D90 value of said particles is less than 2.0 µm.

43. (New) $LiMPO_4$ particles produced by the process of Claim 1, wherein the difference between the D90 value of the particles and the D10 value is no more than 2 µm.

44. (New) $LiMPO_4$ particles of Claim 43, wherein the difference between the D90 and the D10 value is less than 1.5 µm.

Discussion of Claims

The original claims, as filed, contained a variety of types of claims, all based on the discovery of a particular type of $LiMPO_4$ and a process of manufacture of that compound. Each of the claims of the application has been amended to conform to U.S. patent practice without adding any new subject matter.

New Claims 41 through 44 have been added and claim $LiMPO_4$ particles produced by the process of Claim 1 having a particular particle size distribution that is unique. No prior art $LiMPO_4$ particles have this particle size distribution. Basis for these claims is contained on page 14, lines 5 - 29 of the English translation of the application. No new subject matter is introduced by these new claims.

All of the remaining claims are based on the claim language of the claims as originally filed in the PCT application. No new subject matter has been introduced in any of those claims.